

**READ HEAD HAVING A TUNNEL JUNCTION SENSOR
WITH A FREE LAYER BIASED BY EXCHANGE COUPLING
WITH INSULATING ANTIFERROMAGNETIC (AFM) LAYERS**

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ABSTRACT OF THE DISCLOSURE

Longitudinal biasing of a free layer in a current perpendicular to the planes of the layers (CPP) type of sensor in a read head is implemented by pinning magnetic moments of first and second side portions of the free layer beyond the track width of the read head with first and second insulating antiferromagnetic (AFM) layers which are exchange coupled thereto. The pinning of the magnetic moments of the first and second side portions of the free layer pin and longitudinally bias the central active portion of the free layer within the track width so that the central portion of the free layer is magnetically stable.

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